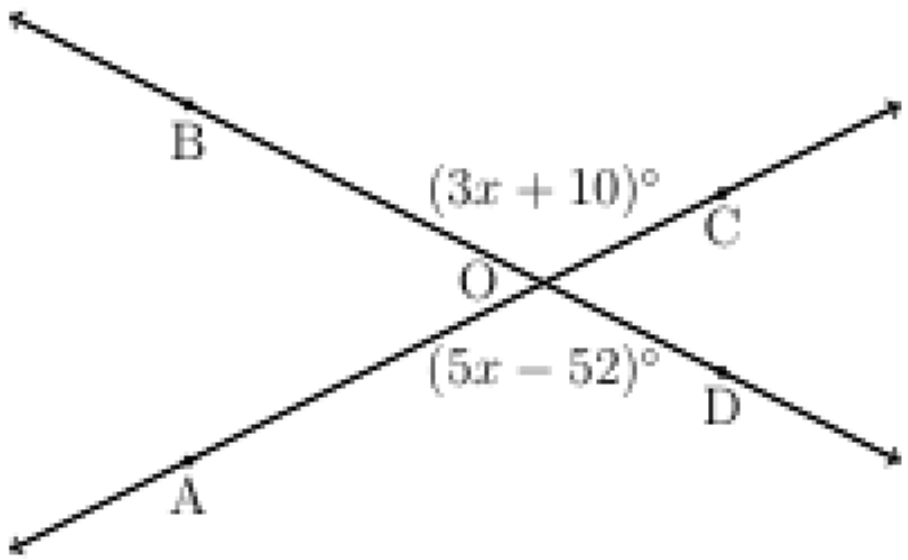
Topic: Congruent angles

Question: Find the angle measure.

What is the measure of $\angle AOB$ in this figure?



Answer choices:

A $31°$

B $54°$

C $77°$

D $82°$

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Solution: C

Vertical angles are congruent, so

$$5x - 52 = 3x + 10$$

$$2x = 62$$

$$x = 31^\circ$$

Therefore,

$$\angle BOC = 3x + 10 = 3(31) + 10 = 103^\circ$$

$\angle AOB$ and $\angle BOC$ add up to 180°, so

$$\angle AOB + 103^\circ = 180^\circ$$

$$\angle AOB = 77^\circ$$

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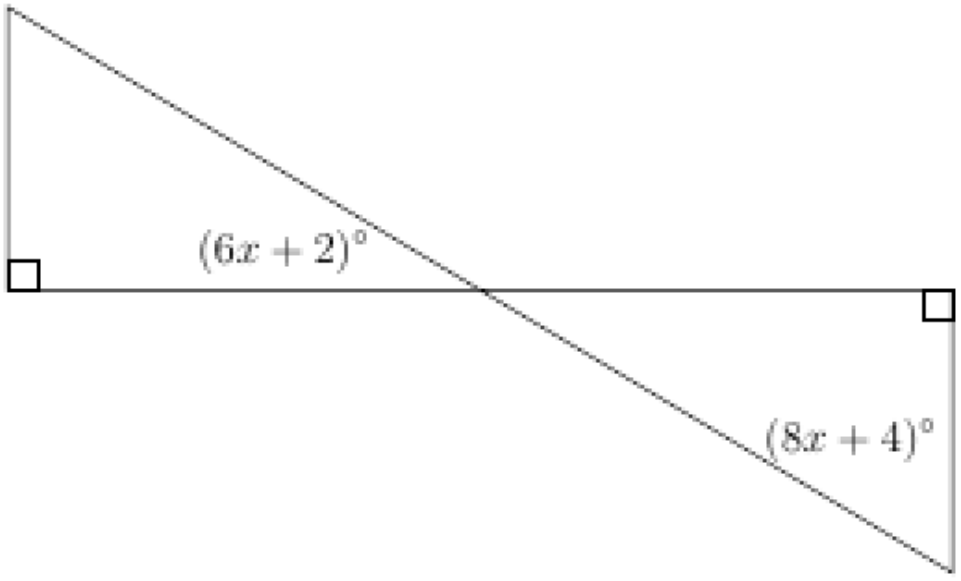
Topic: Congruent angles

Question: What is the value of x in this figure?



Answer choices:

A -1°

B 6°

C 11°

D 14°

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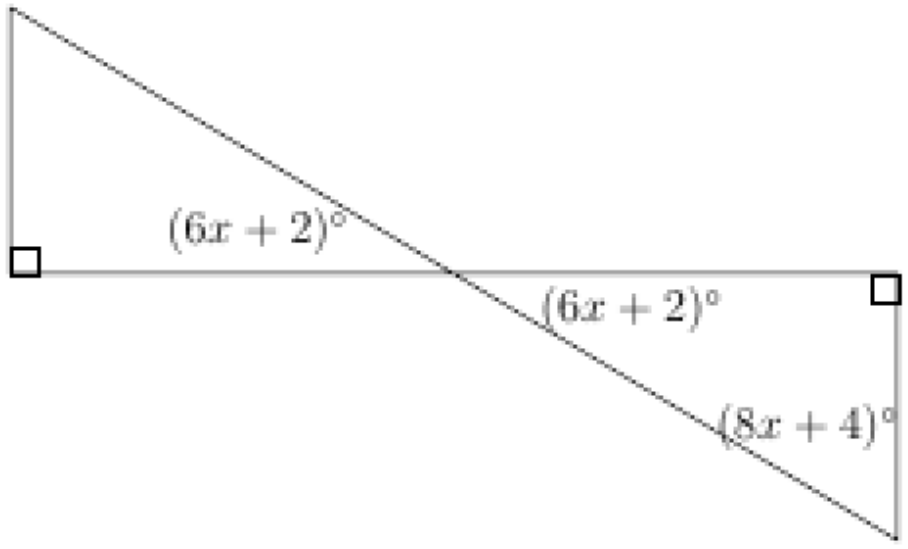
Solution: B

Vertical angles are congruent, so the angle opposite $(6x + 2)^\circ$ is also $(6x + 2)^\circ$.



The sum of angles in the lower right triangle must be 180°. Therefore,

$$(6x + 2) + (8x + 4) + 90 = 180$$

$$14x = 84$$

$$x = 6$$

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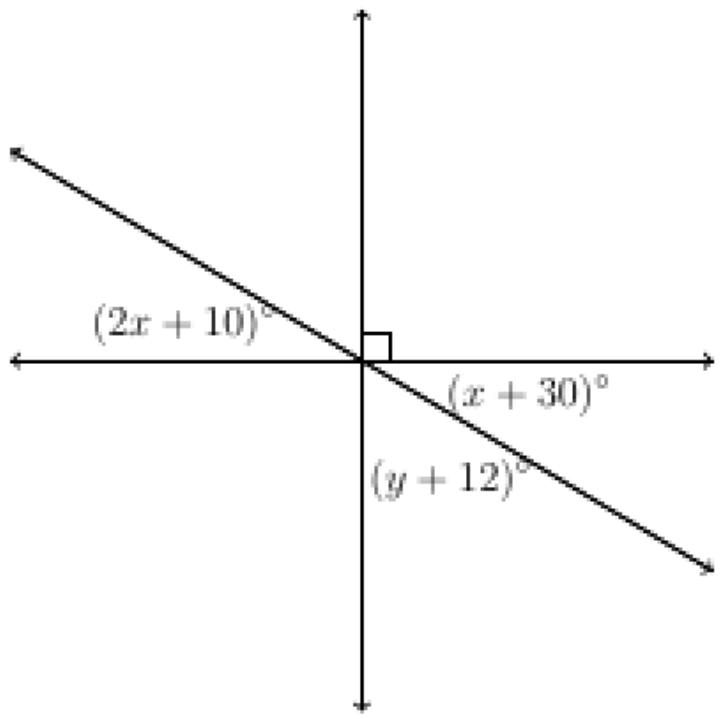
Question: Solve for the variable.

What is the value of y in this figure?



Answer choices:

A $20°$

B $28°$

C $38°$

D $40°$

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Solution: B

Vertical angles are congruent, so

$$2x + 10 = x + 30$$

$$x = 20$$

We can now use $x = 20$ to solve for y.

$$x + 30 + y + 12 = 90^\circ$$

$$20 + 30 + y + 12 = 90^\circ$$

$$y = 28^\circ$$

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